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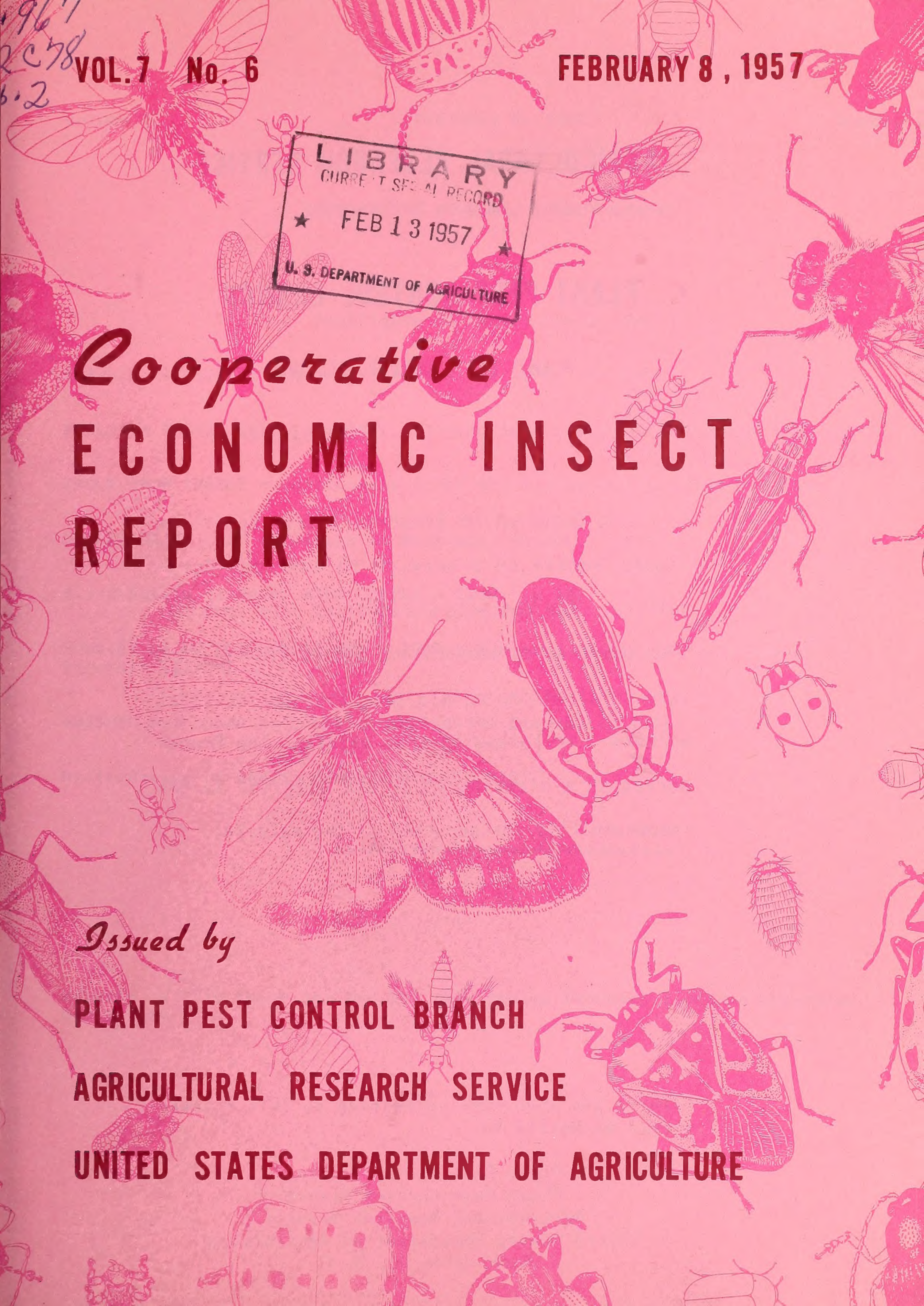

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 7 February 8, 1957 Number 6

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

ALFALFA WEEVIL outlook in New Jersey for 1957. (p.93).

A CLOVER WEEVIL (*Hypera meles*) reported from Louisiana for first time. (p.93).

TRUCK CROP INSECT conditions in lower Rio Grande Valley, Texas. (p.93).

STORED GRAIN PEST situation in Maryland. (p.95).

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INSECTS not known to occur in the United States. (p.109).

Distribution of RANGE GRASSHOPPERS. (p.110).

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Reports in this issue are for the week ending February 1 unless otherwise designated.

WEATHER BUREAU'S 30-DAY OUTLOOK

FEBRUARY 1957

The Weather Bureau's 30-day outlook for February calls for temperatures to average above seasonal normals east of a line extending from the Great Lakes through central Texas. In the remainder of the nation below normal averages are expected.

Precipitation is predicted to exceed normal over most of the country except for near or sub-normal amounts in the Pacific northwest and along the Gulf Coast.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D.C. Price $4.80 a year, $2.40 a half year.

WEATHER FOR THE WEEK ENDING FEBRUARY 4, 1957

Frontal activity between strongly contrasting air masses in the Southeast brought excessive rainfall, totaling as much as 8 inches to the southern Appalachian region early in the period. These amounts when added to the heavy accumulations of the previous week resulted in disastrous flooding with millions of dollars damage to communities in southern West Virginia, southwestern Virginia, southeastern Kentucky, and eastern Tennessee. Flooding extended into northern portion of Mississippi, Alabama and Georgia and into the lower Ohio River Valley as crests moved downstream. Weekly precipitation totals were moderate to heavy from the Atlantic coast inland to a line extending from Abilene, Texas to Portland, Maine, excepting Florida where only light scattered showers fell mainly in the extreme north. In addition, relatively small areas in the extreme Northwest and Southwest also received moderate to heavy amounts for the period. Extremely cold conditions prevailed in the Northwest for the fourth consecutive week with Washington reporting the coldest week in several years. In contrast unseasonably warm conditions continued for the second week in the extreme Southeast, where some temperature records were equaled or exceeded from Alabama to North Carolina. The boundary separating the above from the below normal temperature this week extended from the Oklahoma Panhandle to southwestern New Mexico and to Waco, Texas and from the latter point to Rochester, New York, and thence eastward to the coast. Greatest average departures reported for the week ranged from -18° at Omak, Washington to +18° at Mobile, Alabama. Although light snowfalls were frequent in Northern Border States this week, no significant changes were observed in the snow cover at lower elevations. At higher elevations in the West depths were increased in some areas. Measurements this week include 146 inches at Mount Baker Lodge, Washington; 77 inches at Crater Lake, Oregon; and 43 inches at Bright Angel, Arizona. Ice thickness reports on Monday include 28 inches at Bismarck, North Dakota; 18 inches at Huron, South Dakota; 19 inches at La Crosse, Wisconsin; and 23 inches at Greenville, Maine. (Summary Supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

ALFALFA WEEVIL (*Hypera postica*) - NEW JERSEY - Fall egg survey showed 72 percent of alfalfa fields in State have infestation compared with 42 in fall of 1955. Average number of egg clusters is more than 2 per 100 stems. It appears that all alfalfa acreages in State should be treated for this pest in 1957. (N.J. Dept. Ag. & Rutgers Univ.).

WINTER GRAIN MITE (*Penthaleus major*) - TEXAS - Survey of 20 counties through central area, Jan. 21-25 showed generally light infestations with an occasional heavily-infested field. (Turney).

A LEAFHOPPER (*Empoasca* sp.) - LOUISIANA - In East Baton Rouge Parish, 130 per 100 sweeps of burclover. (Oliver).

A CLOVER WEEVIL (*Hypera meles*) - LOUISIANA - Single specimen taken from ground trash at Tallulah, Madison Parish, December, 1956. Det. R.E. Warner. First record for State. (Oliver).

SPOTTED ALFALFA APHID - CALIFORNIA - Alfalfa hay yield estimates (CEIR 6(34):847) have been revised as follows: California's 1956 hay yield, 4.5 tons per acre, was lowest since 1949, principally due to spotted alfalfa aphid. Estimated yield of 4.6 tons on August 1 was not reached due to heavy build-up of the aphid after that date in Sacramento and northern San Joaquin Valleys. Ten-year average (1945-54) was 4.6 tons hay per acre. (Cal.Crop Livestock Rept.). UTAH - Difficult to find in Millard County due to severe cold weather. (Rickenbach, Knowlton). ARIZONA - A fungus (*Entomophthora* sp.) observed to control the aphid on alfalfa in most fields in Yuma Valley. Det. I. Hall. Noticeably fewer aphids in Yuma Valley and many fields treated in December and January have remained free of infestation. In Yuma area, aphids have fluctuated since December. Populations low generally. Lady beetles controlling aphid in some cases. (Ariz. Coop. Rept.). TEXAS - Medium infestations on alfalfa in Collin, Grayson, Fannin, Lamar, Henderson and Anderson Counties. Infestations light in McLennan, Freestone and Leon Counties. (Turney). OKLAHOMA - Very few aphids in alfalfa in Muskogee and LeFlore Counties. (Washum). ARKANSAS - Present in all fields examined in northwestern counties. Light numbers. Heavier activity reported from Phillips-Crittenden County area. (Warren, Jan. 25). LOUISIANA - Populations very light in alfalfa in Bossier, Natchitoches and East Baton Rouge Parishes. (Oliver). VIRGINIA - No specimens taken from alfalfa sweeping in Goochland, Princess Anne, Hampton City and James City Counties. (Rowell, Morris).

FRUIT INSECTS

PECAN CARPENTERWORM (*Cossula magnifica*)-GEORGIA - Noted in several pecan orchards in Terrell, Dougherty and Peach Counties. (Osborn, Jan. 28).

TRUCK CROP INSECTS

Truck Crop Insect Situation, Lower Rio Grande Valley, Texas: ROOT APHIDS problem in cabbage fields suffering from lack of moisture. In fields regularly irrigated, predators keeping aphids under control. CABBAGE APHID (*Brevicoryne brassicae*) problem in several fields. CABBAGE LOOPER (*Trichoplusia ni*) at low level, but requiring control. ONION THRIPS (*Thrips tabaci*) appearing in several fields with up to five per plant some fields. TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) populations on strawberry leaves sufficiently large to require treatment. (Wene, Deer).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - ARKANSAS-Hibernating weevils per acre by county from 64 trash samples are Pope, 242; Conway, 121; Hempstead, 1008 compared with 1717 in January, 1956 in that county. Other Arkansas counts in CEIR 7(3):32. (Warren, Leigh, PPC, Jan.25).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

MONTEREY-PINE WEEVIL (Pissodes radiatae) - CALIFORNIA - Collection containing larvae, pupae and adults from 4 or 5-year-old dead and dying Monterey pine trees growing in Baywood Park at Morro Bay. Infestation heavy. Also included from same trees were Ips radiatae, Pityophthorus sp. and Rhyaciona pasadenana. (Cal. Coop. Rept., Jan. 25).

IPS BEETLES (Ips spp.) - ARKANSAS - Considerable activity during late fall in Scott-Sebastian-Logan County area. In Garland, Montgomery, Hot Springs and Dallas Counties fewer and lighter infestations observed. (Warren, Phifer, Jan. 25).

A WAX SCALE (Ceroplastes sp.) - NORTH CAROLINA - Averaging two per three inches of twig locally on blueberry in Beaufort County. Apparently increasing in distribution. (Williams, Farrier).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Increasing rapidly in Phoenix nursery and killing pittosporum, Jan. 29. (Ariz. Coop. Rept.).

BLACK SCALE (Saissetia oleae) - ARIZONA - Scattered small infestations increasing on ornamentals and figs in Phoenix area. (Ariz. Coop. Rept.).

WHITEFLIES - OREGON - Seriously infesting Portland green house plantings of Bouvardia. (Larson). NORTH CAROLINA - Trialeurodes vaporariorum heavy locally on gardenia in Pamlico County, Jan. 10. (Wray).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - FLORIDA - Aedes vexans averaging one bite in 20 minutes; Culex salinarius averaging 10 in 20 minutes at Gainesville, Alachua County, Jan. 15. (Mead).

CATTLE GRUBS - ARKANSAS - Examination of 549 head of cattle Jan. 15-25, in Washington, Benton, Garland, Dallas, Chicot, Lincoln, Cross and Craighead Counties showed infestations averaged 2.27 grubs per animal compared with 8.48 per animal Jan. 1956. (Warren, Lancaster, Hunter, Jan. 25.).

CATTLE LICE - UTAH - Serious in several areas. More than 5000 head of cattle sprayed by one commercial operator in Millard County. Others have sprayed their own herds. (Rickenbach, Knowlton). In Beaver County, 7000 head were sprayed in 1956 and lice severe there now. (Esplin, Knowlton).

CATTLE TAIL LOUSE (Haematopinus quadripertusus) - MISSISSIPPI - Becoming serious pest of cattle in Wilkinson County. (Young).

SHEEP SCAB MITE (Psoroptes equi ovis) - VIRGINIA - Found on 1048 of 3295 head of sheep inspected in State during December. All were dipped. Private sources reported 116 head infested in Augusta County, six in Frederick County and 13 in Lee

County. (Va. Livestock Health Bul. Jan.).

STORED PRODUCTS INSECTS

Stored Grain Pest Situation, Maryland: Fifty bins of stored small grains examined in six representative counties in December and January showed the following infestations: 11 bins with GRANARY WEEVIL (8 heavy); 2 bins with RICE WEEVIL (2 heavy); 25 bins with CADELLE (10 heavy); 9 bins with FLAT GRAIN BEETLE (5 heavy); 15 bins with SAW-TOOTHED GRAIN BEETLE (10 heavy); 8 bins with *Ahasverus advena* (5 heavy); 5 bins with ANGOUMOIS GRAIN MOTH (2 heavy); 12 bins with MITES; and 26 bins with PSOCIDS. No KHAPRA BEETLE found. (U.Md., Ent.Dept.).

KHAPRA BEETLE (*Trogoderma granarium*) - OKLAHOMA - No known infestations to date. (Fed.-State survey).

MISCELLANEOUS INSECTS

OLD HOUSE BORER (*Hylotrupes bajulus*) - NORTH CAROLINA - Moderate infestation in pine rafters of home in Bertie County. (Wright).

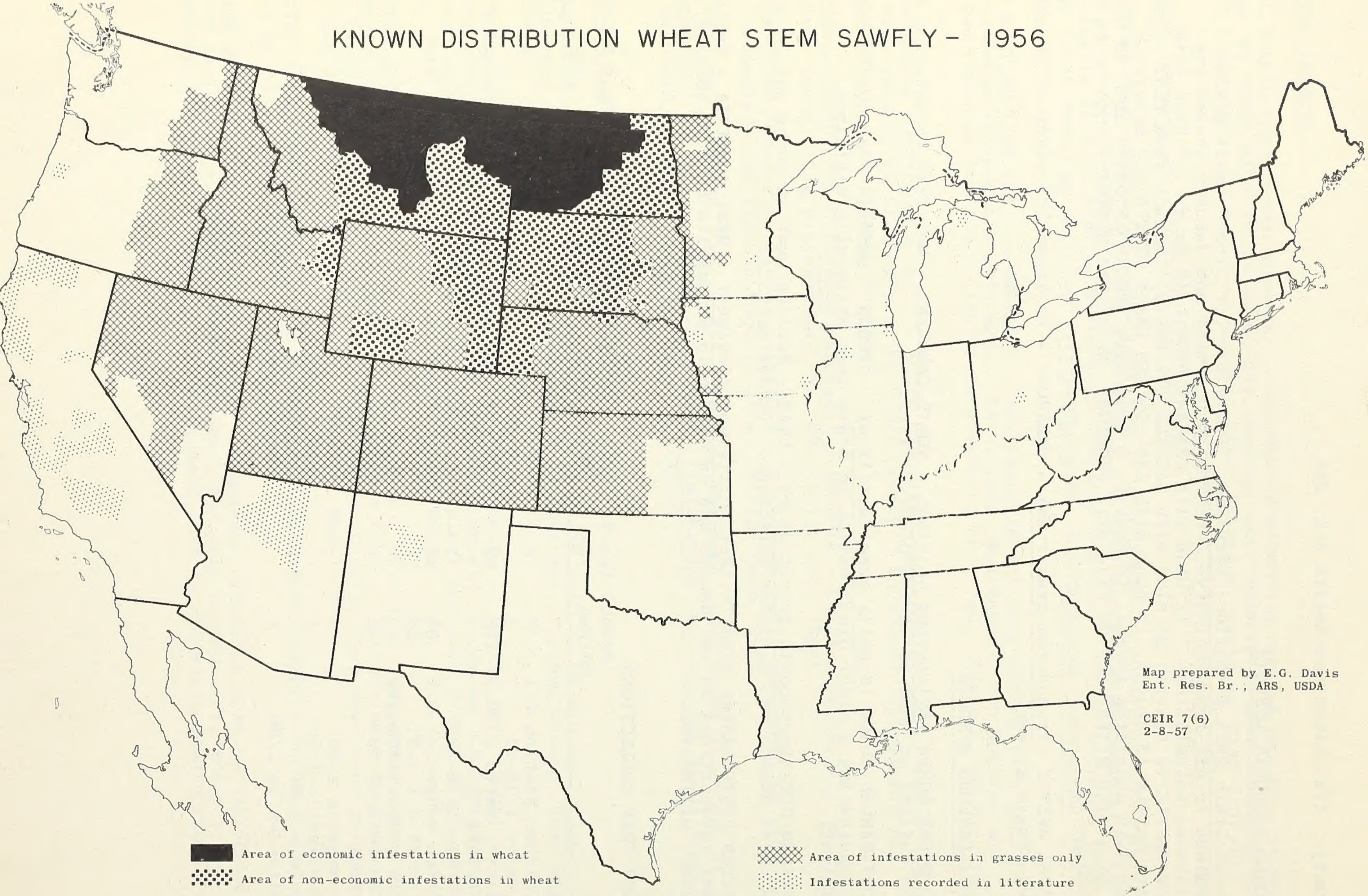
BROWN-BANDED ROACH (*Supella supellectilium*) - OREGON - Reports continue to come in, indicating a wider distribution in State than originally estimated. (Capizzi).

BOXELDER BUG (*Leptocoris trivittatus*) - UTAH - Serious pest in homes and in a church at Joseph and in other buildings. (Knowlton).

EASTERN SUBTERRANEAN TERMITE (*Reticulitermes flavipes*) - WEST VIRGINIA - Medium to heavy infestations in two houses and an office in Monongalia County. (Dorsey, Hansen, Gillespie).

LIGHT TRAP COLLECTIONS

	Pseud. unipun.	Agrot. yps.	Prod. orni.	Feltia subt.	Laphyg. frugip.	Perid. marg.	Heliothis zea
TEXAS							
College Station 2/1	9	6	9	11		5	4
Denton 1/16-31	3				1		
Winter Haven 1/16-31	118	62	23	22		41	8
LOUISIANA							
Curtis 1/15-28		1	3			1	
Baton Rouge 1/1-2/1	58	28	8	216		8	
Franklin 1/1-31	45	17	17	108	2	1	
SOUTH CAROLINA(County)							
Oconee 1/19-25	2						
FLORIDA							
Homestead 1/29				10			
Monticello 1/29	1		12	25			
Quincy 1/28		2		3			
Gainesville 1/30	1		3	18			



KNOWN DISTRIBUTION WHEAT STEM SAWFLY - 1956

■ Area of economic infestations in wheat

▩ Area of non-economic infestations in wheat

▨ Area of infestations in grasses only

░ Infestations recorded in literature

Map prepared by E.G. Davis
Ent. Res. Br., ARS, USDA

CEIR 7(6)
2-8-57

SUMMARY OF INSECT CONDITIONS - 1956

NEBRASKA

Reported by L.W. Andersen, R. E. Hill, R. E. Roselle

Introduction: In Nebraska, 1956 was highlighted and characterized entomologically by a severe outbreak of PALE-WESTERN CUTWORMS on wheat in the panhandle and southwestern counties, a heavy infestation of TWO-SPOTTED SPIDER MITES on corn in the western North Platte Valley, an unusually large and damaging second generation of true ARMYWORMS on corn in east-central Platte Valley, a decrease in EUROPEAN CORN BORERS except in irrigated areas where populations increased slightly, and the second invasion of the SPOTTED ALFALFA APHID which spread to all counties of the State and caused severe late season damage to alfalfa in the Platte Valley and southward. One of the heaviest GRASSHOPPER infestations was experienced in the eastern third and also in a few isolated western areas of the State. This was climaxed by a grasshopper fall egg survey showing the highest potential in many years.

Legume Insects: ARMY CUTWORM (*Chorizagrotis auxiliaris*) occurred in only a few important outbreaks in western areas on wheat and alfalfa, but damaged many alfalfa fields in the eastern third of the State. Moth flights began in April and reached their peak in mid-May. As many as 18,712 moths were caught in a single day. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) populations of overwintered adults during the spring months were as high as 15 per 25 sweeps in the northeast area where chemical control measures were necessary in some newly-planted fields. Adults from eggs laid by the overwintering generation began emerging in mid-June, but the populations were lower than during the spring. By mid-July adult weevils were very scarce (1-2 per 100 sweeps). RAPID PLANT BUG (*Adelphocoris rapidus*) populations averaged 4 per 10 sweeps. ALFALFA PLANT BUG (*Adelphocoris lineolatus*) populations were generally moderate throughout Nebraska. First found in the southeastern counties in late May, began to build up in early June (40-50 nymphs per 10 sweeps) and averaged 7 per 10 sweeps throughout summer and fall. TARNISHED PLANT BUG (*Lygus lineolaris*) was in moderate to heavy local populations generally with counts from 5 to 10 per 10 sweeps in early May to 4 to 39 per sweep in mid-October. Some damage occurred to alfalfa left for seed. PEA APHID (*Macrosiphum pisi*) did not start to build up until late May (150-200 per 10 sweeps) and reached peak in mid-August in the Republican and Platte Valleys when counts ranged between 350 and 500 per sweep. Even as late as mid-November counts ranged from 110 to 300 per sweep in the Republican and Platte Valleys. ALFALFA WEBWORM (*Loxostege commixtalis*) occurred in moderate, local populations in the southern areas where webbing was noticeable in many fields. Larval populations reached their peak in mid-July. Moderate infestations of GARDEN WEBWORM (*Loxostege similalis*) occurred on alfalfa with counts from 5 to 26 per 10 sweeps. Webbing was very prevalent. Heavy populations of ALFALFA CATERPILLAR (*Colias philodice eurytheme*) occurred generally throughout the alfalfa producing areas, May-September. Counts ranged from 3 to 10 per 10 sweeps. GRASSHOPPERS--crop species. Light to severe damage occurred locally and chiefly in alfalfa, clover, pasture, corn and corn margins. From 50 percent to 85 percent defoliation occurred in some areas. The areas included the eastern third of the State, a small portion in the southwest, and isolated areas along the Platte Valley and other smaller river valleys. Predominant species were *Melanoplus femur-rubrum* in eastern Nebraska followed by *M. mexicanus*, *M. differentialis* and *M. bivittatus*. *M. mexicanus* population was much higher than in past years. A second generation occurred in September when 41 percent of the grasshoppers collected proved to be *M. mexicanus* nymphs. GRASSHOPPERS--range species. A threatening infestation was located in Keith, Arthur, McPherson, Logan, southern Thomas, northwestern Lincoln and southwestern Dundy Counties; with severe infestations occurring in central and northern Dundy, western Deuel, eastern Cheyenne and southern Garden counties. Local, light infestations were found in Box Butte, Scotts Bluff, Hooker, Thomas and Blaine

Counties. Dominant species on rangeland was *Ageneotettix deorum*. Egg survey in general substantiated the adult survey. Many areas through the rangeland revealed 22-25 egg pods per 5 square feet. Approximately 630,000 acres were treated in the State with a savings to the farmer of $11,356,200. Estimated loss from this pest was $5,187,400. YELLOW-STRIPED ARMYWORM (*Prodenia ornithogalli*) was light to moderate in alfalfa and corn fields in early August in northeastern and north-central Nebraska but caused no serious damage. PAINTED LEAFHOPPER (*Endria inimica*) was light to moderate in alfalfa, small grains and pasture in south-central and southeastern areas. Adults reached peak in early June (604 per 400 sweeps), nymphs reached peak in late May (169 per 400 sweeps). Moderate infestation of A LEAFHOPPER (*Aceratagallia uhleri*) existed throughout the year on small grain, alfalfa, pastures and in lawns. South-central areas used control in alfalfa fields. ALFALFA WEEVIL (*Hypera postica*) caused light feeding injury to alfalfa in the northwestern counties. Larvae ranged from 5 to 27 per 25 sweeps through early June. New county records were Grant and Hooker. CLOVER SEED CHALCID (*Bruchophagus gibbus*) occurred in moderate, local populations in Madison, Saunders and Douglas Counties with light damage to seed. SPOTTED ALFALFA APHID was found February 27 but then winter-killed out. It appeared July 9 in Dundy County and July 13 in Gage County. Count at this time was 2 to 3 per 100 sweeps. By mid-October it was statewide and populations ranged upwards to 2000 per sweep. There was little if any injury to the first two cuttings although aphids were present in some areas during second growth period. Economic damage resulted to the third cutting to various degrees in several sections. Estimates of this damage--based only on the last cutting but expressed as a percentage of the total production and the estimated loss in tons is as follows: 161,262 tons valued at $3,144,609. Greatest damage was in the eastern and southwest areas. YELLOW CLOVER APHID (*Pterocallidium trifollii*) infestations were confined to the eastern third of the State. No serious damage occurred to red clover or sweetclover.

Corn Insects: CORN EARWORM (*Heliothis zea*) infestations were moderate throughout the central, south-central and southeastern counties. Climatic conditions were favorable during summer for development. Larval populations reached peak during last of August and the first part of September. A CUTWORM (*Euxoa detersa*) caused severe damage to corn on sandy soil in northeastern area. Three replantings were necessary in some areas. EUROPEAN CORN BORER (*Pyrausta nubilalis*) spring survey revealed a good winter survival that presented a threat to the corn during 1956. By area populations ranged from 1422 to 6138 borers per acre. By June 15 emergence was well underway. Egg deposition reached a peak by July. Second-generation adults began to appear in mid-July intermingled with first-generation larvae, as was the case during 1955. Second-generation larvae were down from the previous year. (See CEIR 7(4):61). Total number of bushels of corn lost due to corn borer in 1956 was 3,396,541 equal to $5,094,811.50. CORN LEAF APHID (*Rhopalosiphum maidis*) infestations were normal on field corn, but grain sorghum and milos in the south-central areas were severely infested. Retardation of head development and loss in weight resulted in many areas. Controls were used. Lady beetles (*Hippodamia convergens* primarily) also helped control this pest. FALL ARMYWORM (*Laphygma frugiperda*) was light to moderate in corn in the southeastern, south-central and central areas and caused much ear dropping. ARMYWORM (*Pseudaletia unipuncta*) infestations were light to moderate and spotted in the eastern and central areas on wheat, oats and corn for the first generation. Moth flights were extremely heavy at the Lincoln and North Platte stations in early May. Second-generation larvae caused serious damage to irrigated corn in Hall, Buffalo, Adams and Kearney Counties in early August. This was the first time since 1929 that the second generation caused any trouble. Counts ranged from 7 to 12 per square foot, and as many as 8 larvae were found on a single corn plant. CHINCH BUG (*Blissus leucopterus*) migrations from bunch grasses to wheat began in mid-April. Migration to corn began in late June in the southeastern area with counts from 155 to 240 per stalk on marginal corn. Fall survey revealed a light to severe condition in the southeastern counties. Counts ranged up to 1600 bugs per square foot. Moderate local populations of WIREWORMS (*Melanotus* spp) caused moderate damage in several areas of the central and eastern corn-growing region.

Other Cereal and Forage Insects: PALE WESTERN CUTWORM (*Agrotis orthogonia*) was generally heavy in Cheyenne and southern Morrill Counties. The infestation occurred over a larger area embracing Dundy, Chase, Perkins, Keith, Deuel, southern Garden, Cheyenne, southern Morrill, Kimball, Banner, Scotts Bluff, Box Butte and southern Sioux Counties. Approximately 150,000 acres were treated with a saving to farmer of $5,122,000. Counts as high as 15 per linear foot were found in Cheyenne County. BROWN WHEAT MITE (*Petrobia latens*) infestations in southwestern Nebraska on wheat, in late April, spread northward and eastward to all the wheat-growing areas of Nebraska by early June. Here, mites were too numerous to count. Damage resulted to wheat and oats, particularly in southeastern and south-central areas. GREENBUG (*Toxoptera graminum*), ~~occurred~~ in light non-economic infestations occurred on wheat and oats in central and eastern areas as far north as Cuming County. HESSIAN FLY (*Phytophaga destructor*) population, as in 1955, was extremely low because of the drought. FALSE WIREWORM (*Eleodes* spp.) adults were abundant in most wheat fields in central and southwestern areas. BEET WEBWORM (*Loxostege sticticalis*) infestations embraced on area from North Platte to Kimball and northward to Alliance. Larvae ranged to 80 per 100 sweeps. As many as 10 moths were found per square yard in many fields.

Insects of Shade Trees, Perennials and Other Ornamentals: General infestations of ELM TREE BORER (*Saperda tridentata*) occurred along the Platte Valley from eastern to western Nebraska. *Atanycolus* ulmicola, a parasite of this pest, reduced the population somewhat. EUROPEAN ELM SCALE (*Gossyparia spuria*)- Heavy damaging infestations were reported from western and northeastern areas. Many trees were killed. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) was very abundant on lilac in central and eastern Nebraska. BAGWORM (*Thyridopteryx ephemeraeformis*) was much more abundant than in past years. Severe damage occurred to coniferous trees in southeastern areas and was also present on pin oak, sycamore, and spirea in and about Lincoln. Controls were used extensively. NORTHERN MASKED CHAFER (*Cyclocephala borealis*) infestations were moderate to heavy in lawns and backyard gardens (strawberry beds particularly) in the eastern third of the State. Peak of emergence was reached in the second week in July. SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - No Dutch elm disease was reported. Moderate infestations were found in several areas in southeastern Nebraska. The pest has now been found as far west as Nance County. NANT.PINE MOTH (*Rhyacionia frustrana*) was very abundant on young ponderosa pine in established forest areas and on isolated trees as far east as Lincoln in Lancaster County. Some tips were severely damaged. PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) was moderate to heavy on ponderosa pine in the Pine Ridge area. SPIDER MITES (*Tetranychus* spp) were moderate to heavy on juniper and spruce in the northwestern, central and eastern areas. Some controls used.

Vegetable and Truck Crop Insects: First report of POTATO LEAFHOPPER (*Empoasca fabae*) for the State was March 23 at a blue light trap at the Lincoln station. The largest influx of the leafhopper occurred on May 21. Some "hopperburn" was found in eastern and central Platte Valley and also in the northeastern area. The pest was much more abundant than in past years and ranked thirteenth as a most important insect in Nebraska. POTATO PSYLLID (*Paratrioza cockerelli*) was light locally on potatoes in the upper Platte Valley. No serious psyllid yellow outbreak occurred on potatoes. In Clay County, tomato fields were damaged slightly. MEXICAN BEAN BEETLE (*Epilachna varivestis*) caused light damage to several fields in Scotts Bluff County. BEAN LEAF BEETLE (*Cerotoma trifurcata*) damaged soybeans in central and south-central areas. A STRIPED BLISTER BEETLE (*Epicauta* sp.) was very abundant on field and garden tomatoes and potatoes from mid-July to the latter part of August and populations were much higher than in past years. MELON APHID (*Aphis gossypii*) was very abundant on cucurbits in the southeastern area. Controls were used. TOMATO HORNWORM (*Protoparce quinquemaculata*) caused light damage to field and garden tomatoes and potatoes central and eastern areas. Controls were used in many areas. HARLEQUIN BUG (*Murgantia histrionica*) was moderate on cole crops in eastern and southeastern areas.

Insects Affecting Man and Animals: One of the most serious MOSQUITO outbreaks occurred statewide. In the west the principle species were *Aedes dorsalis* and *Culex tarsalis*. In the east the principle species was *Aedes vexans*. The most serious mosquito problems occurred in Morrill County, especially in the Bayard area. In the eastern area, August rains created large populations of *Aedes vexans* during late August and September. AMERICAN DOG TICK (*Dermacentor variabilis*) population during the spring and summer was lower than that of 1955. The specimens from the Pine Ridge area were found positive for tularemia. HEEL FLIES (*Hypoderma* spp.) became active in mid-April in the sandhill region and developed into a normal situation. First and second instar larvae were picked up at a Lincoln slaughter house in early December. HORN FLY (*Siphona irritans*) populations were light this past summer and little or no control measures were necessary. HOUSE FLY (*Musca domestica*) was a constant nuisance in urban and rural areas. Abundance made it necessary for almost every farm operator to use insecticides as sprays or baits. STABLE FLY (*Stomoxys calcitrans*) build-up occurred in early June. On the first of July, from 25 to 140 flies feeding per animal was common. Peak in abundance was reached during the second week in August. At this time from 75 to 150 flies feeding per animal was not uncommon. A decline in the fly population occurred by the end of September. CATTLE LICE (*Bovicola bovis* and *Hematopinus* spp.) were normal on cattle.

Miscellaneous Insects: CLOVER MITES (*Bryobia praetiosa*) migrations from lawn and perennial borders into homes were generally heavy throughout the State. Migrations began in early spring and continued throughout the summer and late fall. Controls were used extensively.

Cooperators: The following Nebraska entomologists also contributed to the Cooperative Economic Insect Survey during 1956: R.V. Connin, C. Jones, H.J. Ball, O.S. Bare, R. Staples, L.W. Quate, C. Walstrom, D. Fitchett, J. Ball, W. Rapp, and R.L. Wallis.

SUMMARY OF INSECT CONDITIONS - 1956

MISSOURI

Reported by Stirling Kyd and G.W. Thomas

Insect Outbreak Highlights: Severe damage to alfalfa resulted from the heaviest PEA APHID outbreak in years from mid-March to mid-May over the southwest, south central and central third of the State. Several fields in the southwest area were completely destroyed. Fall populations built up to alarming numbers especially in the northern third of the State. SPOTTED ALFALFA APHID overwintered successfully in most of the extreme southwest counties and caused heavy injury in April and May. Populations then declined and remained low until early August when gradual build-up began in the southern area and continued in outbreak numbers over much of the State until frost. Many fall-seeded fields were destroyed or reduced to the point of reseeding. Spots showing GREENBUG damage in barley and wheat became visible early in April in the extreme southwest counties. By early May, the infestation covered the western fourth of the State northward to St. Joseph in Buchanan County. Some small barley fields were completely destroyed and wheat yields were reduced considerably in southwest and west central areas. Larvae of the VAGABOND CRAMBUS caused heavy damage to drought-injured pastures and spring-seeded oats in scattered western areas. In late September, a very heavy flight of moths occurred throughout the State. Nymphal populations of GRASSHOPPERS, occurred in very severe numbers over much of the State but by August adults declined in all areas except southwest. Timely, midsummer rains held crop damage to a minimum with alfalfa, pastures and corn most heavily damaged. Heavy numbers of CHINCH BUGS built up in small grains over scattered areas of the northern two-thirds of the State resulting in heavy marginal injury to small corn and grain sorghums. Some small fields were entirely destroyed. Again the timely summer rains apparently held in check the second generation. Fall surveys revealed 17 counties with very severe numbers, and 21 counties with threatening numbers. Several species of SPIDER MITES began causing injury to seedling cotton and gradually increased to a peak in mid-August resulting in severe defoliation of cotton and some fields of soybeans in extreme southeast area.

New or Unusual State Records: Although the SUGARCANE BEETLE (Euetheola rugiceps) has been reported from Missouri previously, this was the first season that economic damage occurred in many years. A few fields of corn and at least one field of rice were severely injured by adults and replanting of corn was necessary. A new pest, SOYBEAN CYST NEMATODE (Heterodera glycines) was found in Missouri in mid-December by cooperative surveys by USDA and State Department of Agriculture inspectors. The original discovery was at Hayti, Pemiscot County, and subsequent surveys revealed at least six additional findings in Pemiscot County.

Cotton Insects (G.W. Thomas, P.L. Adkisson, L. Jenkins): Generally, cotton escaped widespread injury although widely scattered outbreaks of most major cotton insects occurred. Major pests in order of percentage of fields infested were FLEAHOPPERS, BOLLWORMS, SPIDER MITES and BOLL WEEVIL. The peak of activity of PLANT BUGS including fleahoppers, tarnished plant bugs occurred from mid-July to mid-August although economic populations and damage were light and control was confined to individual fields. Predaceous insects were numerous and helped keep damage to a minimum. Activity of SPIDER MITES (Tetranychus atlanticus, T. telarius, T. cinnabarinus, T. lobosus and T. schoenei) began early and even became a problem in a few fields of seedling cotton. By mid-July infestations were common throughout the area reaching a peak by mid-August. Lack of control resulted in moderate to total defoliation in many fields and reduced both the quality and quantity of the crop. T. atlanticus was the most common species and was responsible for most of the damage. BOLLWORM (Heliothis zea) activity began early in July and reached a peak by late July, continuing unusually high until mid-August but caused only light damage. BOLL WEEVIL (Anthonomus grandis) - Very low numbers successfully overwintered in Missouri for the first time in the past four years. Infestations were held in check by dry weather. Migration began about mid-August and rapidly increased in September and October on the second growth squares and bolls. Populations by the time of freeze were at an all time high throughout the entire area. CUTWORMS (Primarily Peridroma margaritosa) in scattered fields, particularly those bordering alfalfa caused marginal injury. COTTON APHID (Aphis gossypii) infestations were very widely scattered and largely confined to individual plants or small areas within a field. By early June, some spot treatment was used in a very few fields. Unusually heavy marginal infestations of STALK BORER (Papaipema nebris) occurred during June. Many fields had from 2 to 7 percent of marginal rows damaged or destroyed. COTTON THRIPS remained generally low (1 to 3 thrips per 10 plants) until early June when populations increased rapidly to about 2-3 thrips per plant but caused little or no injury. A few fields had light to moderate infestations of COTTON LEAFWORM (Alabama argillacea), requiring control measures by mid-September although populations did not increase after this date.

Corn Insects: WIREWORMS caused light to moderate damage in several southwest counties. Heavy numbers of the DINGY CUTWORM (Feltia subgothica) occurred in the northwest area in drought-damaged pastures and legumes and by early June some injury to small corn appeared. Infestations of BLACK CUTWORM (Agrotis ypsilon) were widely scattered and confined mainly to creek and river bottom fields in the northern third of the State. CORN FLEA BEETLES (Chaetocnema pulicaria) averaged 5-6 per stalk of small corn over the western half of the State, resulting in a high percentage of stalks with Stewart's disease but the damage was not as severe as in 1955. NORTHERN CORN ROOTWORM (Diabrotica longicornis) infestations were widely scattered with only a few fields showing heavy larval injury and only a very few fields had pollination retarded by adult feeding. CORN EARWORM (Heliothis zea) populations and damage were less than in the two preceeding years with approximately 75 to 80 percent of the ears of field corn damaged resulting in 4.12 percent of the grain damaged or destroyed. CHINCH BUG (Blissus leucopterus) (See Outbreak Highlights). SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) fall surveys revealed 16 southwestern counties with infestations ranging from 0.1 to 5.2 percent. EUROPEAN CORN BORER (Pyrausta nubilalis) populations were down with the exception of the southeast area. Fall surveys of districts revealed northwest with an average of 67 borers per 100 stalks; northeast with 46; west central with 20 and southeast with 226. The State mean for 1956 was 90 as compared with 132 in 1955.

Grain Sorghum Insects: Moderate to heavy infestations of CORN LEAF APHID (Rhopalosiphum maidis) occurred on grain sorghums over most of the State. CORN EARWORM (Heliothis zea) larvae, averaging 2-3 per head from mid-August to mid-September, caused an estimated loss of 5.5 percent of the grain throughout the State. For the first time in recent years, larvae of the SORGHUM WEBWORM (Celama sorghiella) heavily infested and damaged sorghums in the southern tier of counties and in extreme southeast area. The infestation was particularly heavy in Howell County where many fields had 100 percent of the heads infested with 20 to 65 larvae per head.

Small Grain Insects: WINTER GRAIN MITE (Penthaleus major) built up to damaging numbers on barley by mid-April in several extreme southwestern counties. GREENBUG (Toxoptera graminum). See Insect Outbreak Highlights. Leafhoppers, especially the SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons), with counts up to 100 nymphs per linear foot of row, caused considerable yellowing of barley in south central, southwest and west central areas. ARMYWORM (Pseudaletia unipuncta) did not build up to damaging numbers except in the extreme southeast area where control measures were used in barley, wheat, winter oats, rye, and vetch fields. BROWN WHEAT MITE (Petrobia latens) was collected from two damaged fields of barley in Chariton and Carroll Counties. This was the first record of economic damage in the State. HESSIAN FLY (Phytophaga destructor) - Seven east central counties had infestations ranging from 8.8 to 21.2 percent of stems with one or more "flaxseeds" while the average for the 67 counties surveyed was 3.66 percent of stems with "flaxseed" as compared to 3.4 percent in 1955. CHINCH BUG and GRASSHOPPERS. See Insect Outbreak Highlights.

Legume and Pasture Insects: PEA APHID (Macrosiphum pisi) was very severe on alfalfa from early March until May. Many fields were entirely destroyed. The first cutting was reduced 80 to 100 percent in the southern third excluding the southeast area, 50 to 75 percent in the central third and 5 to 20 percent in the northern third. Damage from SPOTTED ALFALFA APHID was estimated at $641,585 for the State. AN APHID (Aphis sp.) built up to damaging numbers on ladino and some fields of alsike clover in the west central area. Very heavy numbers of both CLOVER APHID (Anuraphis bakeri) and YELLOW CLOVER APHID (Pterocallidium trifolii) were common in all red clover fields over the State, resulting in considerable reduction in the growth of the first cutting. Specimens of the SWEETCLOVER APHID (Myzocallidium riehmi) were collected at various points throughout the State but little damage occurred. CLOVER LEAF WEEVIL (Hypera punctata) larvae were not as plentiful as during the past three years. Some few fields of alfalfa and red clover required control of adults. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) larval damage to second and third year red clover ranged from 30 to 65 percent of stems or heads showing injury but this was less than during the preceeding two years. Heavy numbers of DINGY CUTWORM, ranging from 1 to 5 per square foot, occurred in many of the drought-injured pastures, especially in the northwest and north central areas. An outbreak of VARIEGATED CUTWORM (Peridroma margaritosa) occurred in alfalfa over most of the southeast area. BRONZED CUTWORM (Nephelodes emmedonia) occurred in heavy numbers, 1 to 4 per square foot in bluegrass pastures especially in the west central area, resulting in large spots within fields destroyed. VAGABOND CRAMBUS (Crambus vulgivagellus) heavily infested drought-injured pastures in scattered western sections where large areas of grasses were destroyed by 1 to 15 larvae per square foot. WHEAT STEM MAGGOT (Meromyza americana) destroyed from 2 to 5 percent of the stems of bluegrass in the northwest seed-producing area. Mixed populations of CLOVER ROOT CURCULIO (Sitona hispidula) and SWEETCLOVER WEEVIL (Sitona cylindricollis) in an approximate ratio of 10 to 1 caused light to moderate damage to red, alsike, sweetclover and alfalfa in widely-scattered areas. POTATO LEAFHOPPER (Empoasca fabae) caused some yellowing of alfalfa over the southern third of the State where counts ranged up to 7 adults and nymphs per sweep. BLISTER BEETLES (Epicauta spp.) stripped small spots in many alfalfa fields during the summer. Larvae of the GARDEN WEBWORM (Loxostege similalis) built up on alfalfa in early August and caused considerable damage prior to cutting. However, when the hay was harvested populations declined and failed to rebuild on the new growth. TARNISHED PLANT BUG (Lygus lineolaris) appeared in heavy numbers on alfalfa following the spring pea aphid outbreak and remained high during the remainder of the season; 2 to 6 per sweep in most areas. Late summer and early fall infestations of the ALFALFA CATERPILLAR (Colias philodice eurytheme) were heavier than in many recent years over the northern half of the State with damage being severe on seedling stands. Infestations of the THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) in the southern third of the State was lighter than in 1955 and was considered non-economic. GRASSHOPPERS. See Insect Outbreak Highlights.

Stored Grain Insects(P.L. Adkisson, P.J. Spangler and G. Thomas): A cooperative survey for field infestations of stored grain insects in corn and grain sorghums was conducted in October and November in 180 fields in 18 counties uniformly scattered over the State with the following results: ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) was the most common insect infesting approximately 80 percent of the fields from the first tier of counties north of the Missouri River southward where from 10 to 100 percent of the ears were infested. North of the first tier of counties north of the Missouri River, approximately 20 percent of the fields showed infestations ranging from 1 to 40 percent of the ears. ANGOUMOIS GRAIN MOTH was the only stored grain pest found field infesting grain sorghums. Other stored grain pests found field-infesting corn included the INDIAN-MEAL MOTH (Plodia interpunctella), FLAT GRAIN BEETLE (Laemophloeus pusillus)

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*), A FOREIGN GRAIN BEETLE (*Ahasverus advena*), CORN SAP BEETLE (*Carpophilus dimidiatus*), and PSOCIDS (identification pending).

SUMMARY OF INSECT CONDITIONS - 1956

VIRGINIA

Reported by A.P. Morris

Cereal, Hay and Forage Crop Insects: CORN EARWORMS (*Heliothis zea*) damaged corn more usual from about the first of July throughout the remainder of the year, heavily damaged soybean pods in late and scattered fields of eastern area during the latter half of September, and were light on peanuts in some fields of southeastern Virginia in August. Controls on soybeans were applied on several hundred acres. ALFALFA WEEVIL (*Hypera postica*) damage was heavy in approximately 60 counties, and controls were applied on an estimated 36,000 acres. Net value of control is estimated to be $1,459,665 for the year. Eight additional counties were found to be infested in 1956, bringing the total to 71. EUROPEAN CORN BORER (*Pyrausta nubilalis*) damage to corn was approximately the same as during 1955. Damage to wheat and sorghum appeared to increase in eastern Virginia. Damage by GREEN JUNE BEETLE (*Cotinis nitida*) larvae was again widespread and heavy in many parts of the State, mainly to permanent pastures in eastern and southeastern areas. SEED-CORN MAGGOT (*Hylemya cilicrura*) infestations were higher than usual and damage occurred in all areas. Other cereal and forage crop insects that appeared to be slightly more important during 1956 than during 1955 were CLOVER LEAF WEEVIL (*Hypera punctata*), CORN ROOT WEBWORM (*Crambus caliginosellus*), CORN ROOT APHID (*Anuraphis maidi-radicis*), JAPANESE BEETLE (*Popillia japonica*), THRIPS including *Anaphothrips obscurus*, *Frankliniella tenuicornis*, and *Limothrips cerealium*, and various species of SPIDER MITES including *Tetranychus atlanticus*. Damage by CLOVER ROOT CURCULIO (*Sitona hispidula*) and CLOVER ROOT BORERS (*Hylastinus obscurus*) remained approximately the same as during preceding years. A new pest of probable importance to alfalfa discovered in Virginia during 1956 was the SPOTTED ALFALFA APHID.

Cotton Insects: A survey of overwintering BOLL WEEVILS (*Anthonomus grandis*) in four southern counties indicated that 5.75 percent of weevils in hibernation lived through the winter of 1955-56. These increased in numbers to do from light to heavy damage. The top crops and late middle crops of cotton were most heavily damaged. BOLLWORM (*Heliothis* sp.) damage was light to bolls and squares during the latter part of August and in September. SPIDER MITES were too late to cause noticeable damage.

Forest and Shade Tree Insects: BARK BEETLES have been a major threat to Virginia pine trees for the past four years. The primary species involved are SOUTHERN PINE BEETLE (*Dendroctonus frontalis*), IPS BEETLES (*Ips* spp.), BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) and WHITE PINE WEEVIL (*Pissodes strobi*). Infestations of one or more of these species killed large numbers of pines during 1956 but to a lesser extent than in 1955 and 1954. Spot infestations continued in almost all areas where previous damage was experienced. Central Virginia has been hardest hit to date, but spot infestations are expected to continue occurring in all the major pine growing areas probably on a lesser scale in 1957. Damage to pine seedlings by PALES WEEVIL (*Hylobius pales*) is definitely on the increase; it caused considerable damage to pine seedlings in or near cut-over pine stands and in nurseries. RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) damage was heavy to several eastern Virginia pine plantations and sporadic outbreaks of the species occurred over most of the State. Outbreaks were first reported in May and were also active in some areas during late September. PINE BARK APHID (*Pineus strobi*) was heavy on pines in Wythe and Grayson Counties.

A PINE SPITTLEBUG (*Aphrophora parallela*) outbreak occurred in one section of Lancaster County. SPIDER MITES damaged blue spruce trees in Roanoke and Franklin Counties. Defoliation of oaks and associated species occurred during the summer over a large area of the State. The major species involved were VARIABLE OAK LEAF CATERPILLAR (*Heterocampa manteo*), ORANGE-STRIPED OAKWORM (*Anisota senatoria*), GREEN-STRIPED MAPLEWORM (*Anisota rubicunda*) and RED-HUMPED OAKWORM (*Symmerista* sp.). Defoliation occurred from Danville in southern Virginia eastward across the State and into Maryland, with central and eastern areas hardest hit. Defoliation of walnut trees by WALNUT CATERPILLAR (*Datana integerrima*) also occurred over most of the State. Damage by ELM LEAF BEETLE (*Galerucella xanthomelaena*) to elm trees and by LOCUST LEAF MINER (*Chalepus dorsalis*) to locust trees was also statewide and heavy. Additional forest insects of importance during 1956 were EASTERN TENT CATERPILLAR (*Malacosoma americanum*), FALL WEBWORM (*Hyphantria cunea*) and WOOLLY ALDER APHID (*Prociphilus tessellatus*). (Also see p.107).

Fruit Insects: EUROPEAN RED MITE (*Metatetranychus ulmi*) and RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) were the major pests of apples. EUROPEAN RED MITE was very heavy and troublesome throughout the summer in apple orchards, even into September, and a heavy carry-over of eggs is expected in the Piedmont area. This pest cost some growers more money for extra sprays than any other pest during 1956. Second brood RED-BANDED LEAF ROLLER was more difficult than usual to control in some northern apple orchards and, in some orchards, four treatments did not do a satisfactory job. Infestations were very light in apple orchards in the Piedmont area. FALL WEBWORM (*Hyphantria cunea*) was a problem in some orchards during the middle of the summer for a short time. Other insects generally of importance in apple orchards but that were not a problem in 1956 were codling moth, leaf miners, apple aphid, rosy apple aphid, plum curculio, yellow-necked caterpillar, Japanese beetle and various species of scale insects. TARNISHED PLANT BUG (*Lygus lineolaris*) was heavier than usual and was responsible for 95 percent of all the catfacing of peaches. Several orchards on a spray schedule had around 15 percent of the fruit catfaced at harvest. PEAR SLUGS (*Caliroa cerasi*) heavily damaged the foliage of pear and cherry trees in localized situations. LARGE CHESTNUT WEEVIL (*Curculio proboscideus*) damaged chestnuts in Culpeper County.

Household Insects: Household insects of significance during 1956 were BOXELDER BUG, COCKROACHES, CLOVER MITE, ELM LEAF BEETLE, ANTS, MILLIPEDES, CLUSTER FLY, PILLBUGS, and GIANT HORNET.

Insects Affecting Man and Animals: HOUSE FLY (*Musca domestica*) populations became very heavy around poultry houses, calf sheds, hog barnes, homes, dairy barns, eating establishments, etc. Controls, however, are becoming more adequate and timely each year. CATTLE GRUBS (*Hypoderma lineatum* & *bovis*) a problem to some extent in practically all cattle herds in the State. Heaviest infestations occurred in northern and southwestern counties. CATTLE LICE - *Solenoptes capillatus* and *Bovicola bovis* were the principal species. Infestations became very high in several herds in southwestern and northern areas. Control measures were carried out on several herds but not nearly as much as was needed. HORN FLIES (*Siphona irritans*), STABLE FLY (*Stomoxys calcitrans*), HORSE FLIES, and DEER FLIES were a problem on untreated beef and dairy animals and work animals to a much lesser extent than were the cattle grubs and lice. SHEEP SCAB MITE (*Psoroptes equi ovis*) was a problem mostly in northern areas and several flocks were dipped. SHEEP KED (*Melophagus ovinus*) was reported heavy in flocks in one county in central Virginia. Larva of a SCREW-WORM (*Callitroga* sp.) was found in a wound of a newly-sheared sheep. POULTRY LICE and MITES of various species were heavy in 1956 in some flocks of chickens and turkeys in the upper Shenandoah Valley counties. MOSQUITOES, various species, were a serious problem to humans and animals in many parts of the State, as usual. Outbreaks of a mosquito-borne disease of horses equine encephalomyelitis occurred in three widely-separated areas of the State. The counties involved were King George, Essex , Lee, and Princess Anne.

Stored Products Insects: The insect pests of stored grains in elevators and in farm storage were again GRANARY WEEVIL, RICE WEEVIL, ANGOUMOIS GRAIN MOTH, INDIAN-MEAL MOTH, MEDITERRANEAN FLOUR MOTH, CADELLE, SAW-TOOTHED GRAIN BEETLE, SQUARE-NECKED GRAIN BEETLE , A BEETLE (*Ahasverus advena*), CONFUSED FLOUR BEETLE, DARK MEALWORM, CIGARETTE BEETLE and A FUNGUS BEETLE (*Typhaea stercorea*).

Structural Wood Insects: TERMITES were, as usual, the most destructive of the structural wood insects. Number of colonies appears to increase every year. POWDER POST BEETLES, various species, damaged many wooden structures and some furniture, and damage appears to be increasing every year. Improperly seasoned wood used in construction is the primary cause of this increase. Most frequently mentioned causing damage to new homes and in some instances, to old homes is the OLD HOUSE BORER (*Hylotrupes bajulus*).

Truck Crop and Garden Insects: MEXICAN BEAN BEETLE (*Epilachna varivestis*) was at no time during the year heavier than normal nor an unusual problem. COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) was not an unusual problem in 1956. SPIDER MITE infestations became heavy on snap and lima bean plants during late June and were very persistent into August despite some insecticidal applications. HORNWORM (*Protoparce* sp.) outbreaks occurred on tomatoes about the first of July. SEED-CORN MAGGOT (*Hylemya cilicrura*) damage was unusually severe to corn, peas, spinach, and other susceptible crops during April and early May in the truck cropping areas. EUROPEAN CORN BORER (*Pyrausta nubilalis*) damaged potato vines to an unusual but still small extent in eastern areas and caused the usual amount of damage to sweet corn. FALL ARMYWORM (*Laphygma frugiperda*) attacked sweet corn, kale, and collards during August and would have become a threat to some of the crops in eastern area without proper control measures. YELLOW-STRIPED ARMYWORM (*Prodenia ornithogalli*) became very numerous on most tomato and snap bean crops in eastern area during the latter half of August. Some of the crops heavily damaged by FLEA BEETLES in one or more areas were potatoes, tomatoes, cabbage, broccoli, sweet corn, kale, cauliflower, mustard greens, cucumbers, and beans. APHIDS became heavy on almost, if not all, truck and garden crops in one or more areas of the State. PEA APHIDS infestations began to increase on garden peas in eastern Virginia and on the Eastern Shore during May, and control measures had to be applied to protect the crop in some instances. CABBAGE APHID (*Brevicoryne brassicae*) and/or TURNIP APHID (*Rhopalosiphum pseudobrassicae*) built up on overwintering crops of kale, brussel sprouts, and collards during April, and controls had to be applied to the crops during the last half of the month. CABBAGE APHIDS were again heavy on several untreated cruciferous crops during October. POTATO APHID (*Macrosiphum solanifolii*) was severe on tomatoes and potatoes on the Eastern Shore and near Norfolk in June, requiring control. GREEN PEACH APHID (*Myzus persicae*) was sufficiently heavy on commercial spinach crops by early March to need control and persisted on untreated spinach until the early part of May. CABBAGEWORM infestations were normal. SPIDER MITES (*Tetranychus atlanticus* and *T. telarius*) were the most important pests of strawberries during 1956. Infestations remained high for a longer period of time and were harder to control than usual. Strawberry insects of less importance during the year were STRAWBERRY CROWN BORER, OLIQUE-BANDED LEAF ROLLER, STRAWBERRY WEEVIL, STRAWBERRY LEAF ROLLER, and WIREWORMS.

Beneficial Insects: The major beneficial insects during 1956 were various species of LADY BEETLES and PARASITIC WASPS. LADY BEETLES were extremely beneficial, once populations had built up, in keeping infestations of pea aphids and other species of aphids below the level where insecticidal controls were needed on various crops. Some of the beneficial wasps were *Scolia dubia*, *ichneumonids*, and *Sceliphron caementarium*.

Tobacco Insects: On the transplanted tobacco in the fields, TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) seemed to be the most persistent insect species of economic importance during the year. TOBACCO HORNWORM (*Protoparce sexta*) was the most destructive insect pest of tobacco in the fields and most farmers had to apply insecticides two times to control infestations. The first generation began to build up around the last of July and reached a peak about the middle of August. The second generation was not nearly as severe as the first. GREEN PEACH APHID (*Myzus persicae*) infestations persisted from the early part of June until the middle of August and became heavy enough to necessitate control at one time or another in many tobacco fields. TOBACCO BUDWORM, TOBACCO THRIPS, SNOWY TREE CRICKET and WIREWORMS damaged tobacco to some extent during 1956. Budworm and wireworm damage was not as heavy as usual. One species of STINK BUG accused of doing heavy damage was *Euschistus euschistoides*.

Additional Forest, Shade Tree and Ornamental Insects: MIMOSA WEBWORMS (*Homadaula albizziae*) were again severe on mimosa and locust trees, generally, and many trees were severely damaged or killed. BAGWORMS (*Thyridopteryx ephemeraeformis*) were heavy and caused considerable damage to evergreens where controls were not applied, and defoliated many cedars in large area of the State. BOXWOOD LEAF MINERS (*Monarthropalpus buxi*) were heaviest on boxwood plants in the eastern areas.

INSECTS NOT KNOWN TO OCCUR IN UNITED STATES

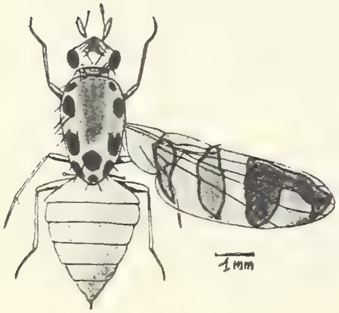
BALUCHISTAN MELON FLY (Myiopardalis pardalina (Bigot))

Economic Importance: Myiopardalis pardalina is a serious pest of melons in Caucasus and Syria; also in Israel where up to 60 percent of watermelon crops and 85-90 percent of muskmelons and other melons are reportedly infested in some years. Observations in Baluchistan, Pakistan indicate that 40,000 melons, if bagged against fly attack, can be produced in an area where only 2500 can be produced if the crop is not bagged. History and distribution of this tephritid indicate it to be more capable of adapting itself to area conditions in the United States, if introduced, than any of the Dacus curcubit flies.

Distribution: India, Pakistan, Russia (Caucasus), Iran, Turkey, Lebanon, Israel, Iraq, Syria.

Host Plants: Watermelon, cucumber, muskmelon, snake melon, pumpkin, squirting-cucumber and phoont (Cucumis trigonus).

Life History and Habits: Passes the winter in soil. In Caucasus emergence begins in June and continues until July. Oviposition begins in about a week and continues for about three weeks, each female laying at least 100 eggs in the pulp of fruit, preferably in newly-set fruits. Melons of about 3-5 inches in diameter under observation were not attacked. The egg stage varies from 2-3 days in summer to a maximum of 7 days in autumn; the larval period lasts 8-18 days; and the pupal stage, 13-20 days or more. Larvae on hatching burrow into the fruit where they feed on the seeds, juice and pulp until time for pupation, when they tunnel out of the host to pupate in soil. Three incomplete generations, which overlap considerably, occur in a year.

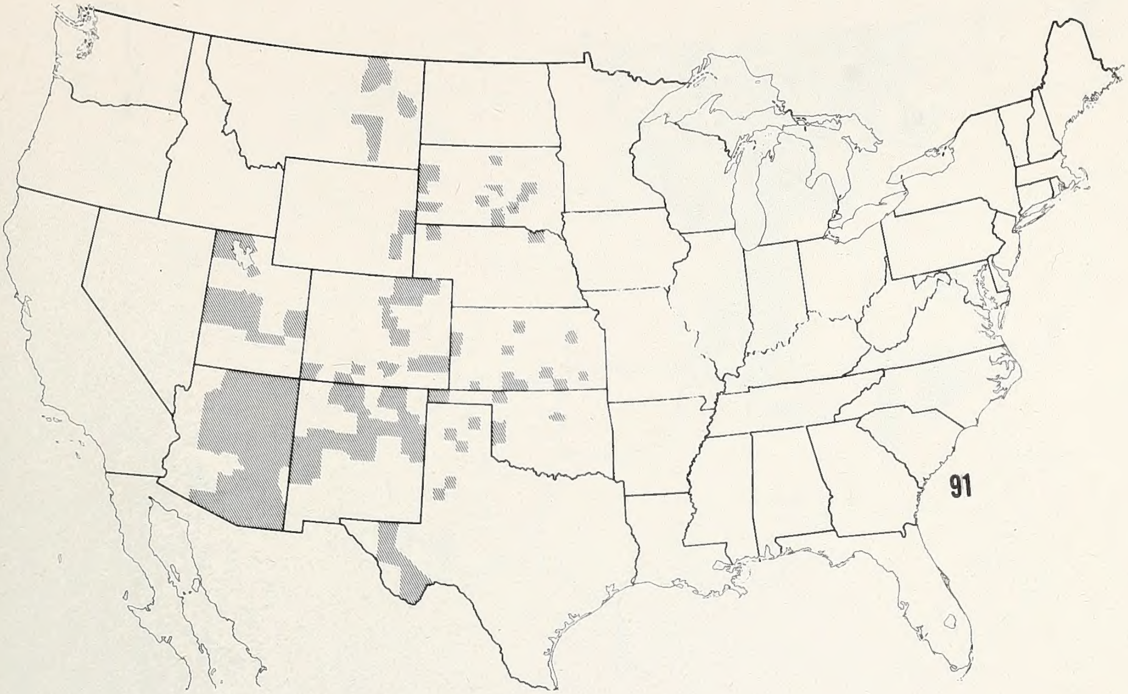


Adult greatly enlarged.
(after Risbec)

Description: The head of the adult is golden colored. The eyes are not prominent. The ocelli are small and close together. Antennae are golden with chaetae of same color. There are long dark chaetae on the face. The reddish anterior median zone of the thorax has numerous small golden hairs. Several dark brown spots are arranged around the sides and posterior end of the thorax. Ventral surface of the thorax is pale yellow with fine golden hairs. Abdomen is triangular and slightly darker than the head. Legs are clear pale yellow. Wings are transparent with one yellow spot near base, a yellow band across middle and V-shaped yellow spot near tip. Body of female is 8 mm. long, the male 6 mm. The pupa is deep red with numerous striations encircling the body in addition to those separating the segments. It is 7 mm. long and 2 mm. wide. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies). February 8, 1957

DISTRIBUTION OF RANGE GRASSHOPPERS

Mestobregma plattei (Thomas)



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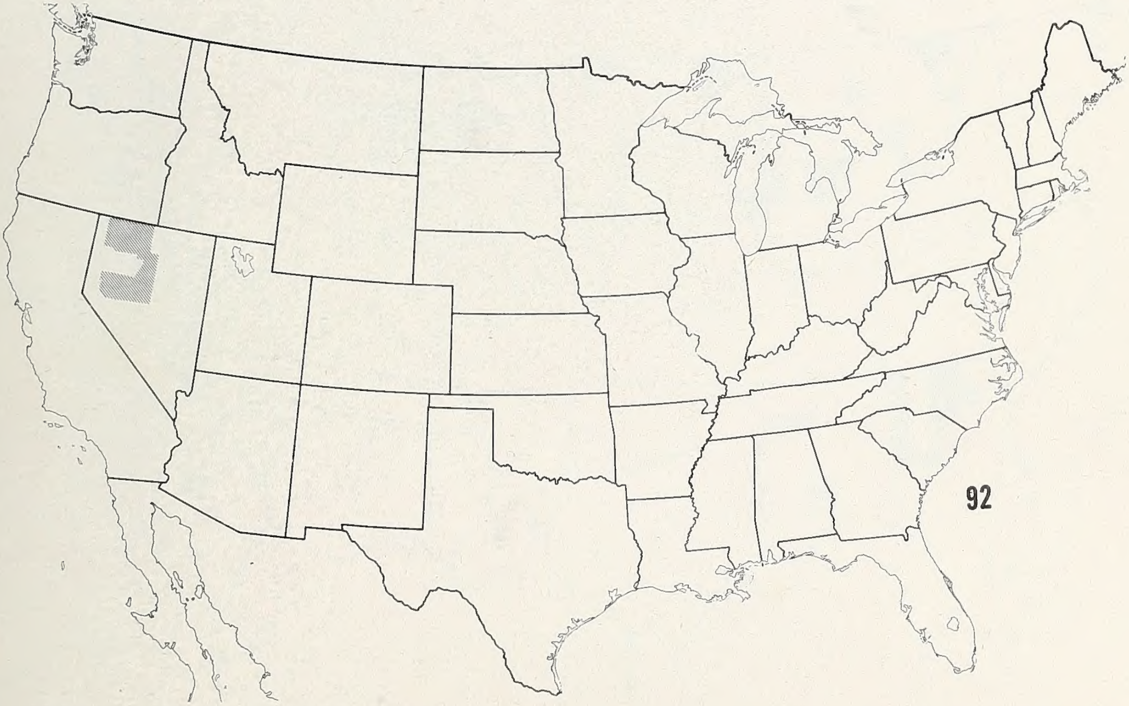
Metator nevadensis (Bruner)



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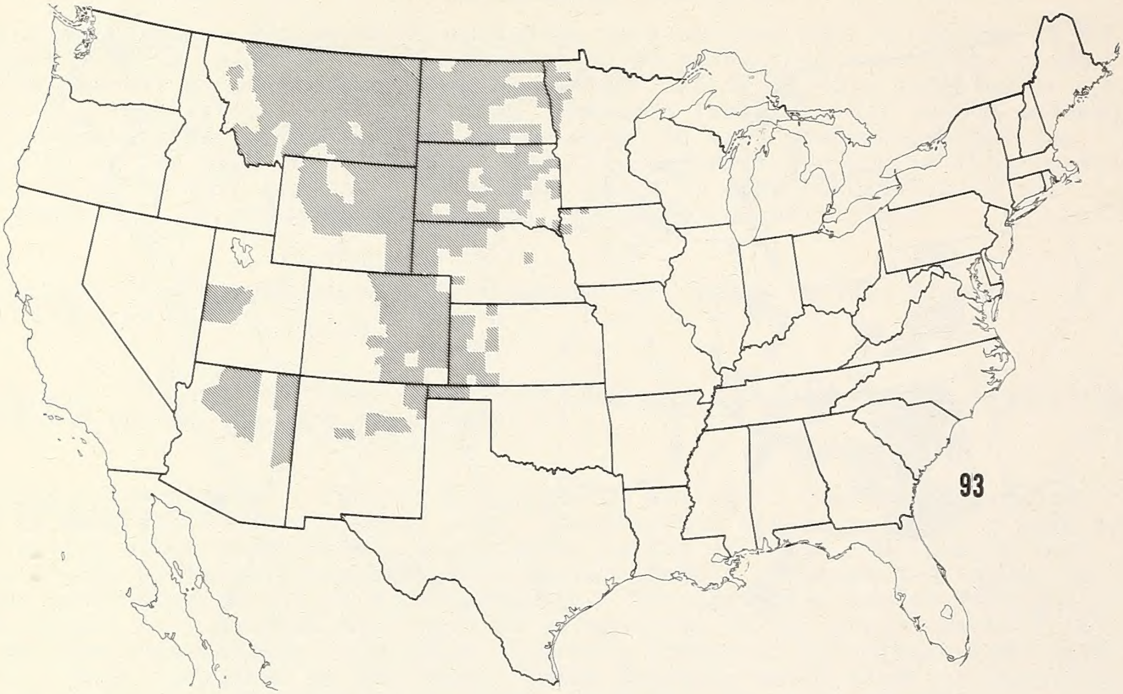
DISTRIBUTION OF RANGE GRASSHOPPERS

Metator pardalinus (Saussure)



Neopodismopsis abdominalis (Thomas)